

What is claimed is:

1. An apparatus for determining a transmission rate, the apparatus comprising:

5 a speech/silence classifying portion, which classifies an input frame as speech or silence, based on a first threshold value that is predetermined for at least one of a fixed code-book gain value, an adaptive code-book gain value, a noise to signal rate, and a pitch delay that correspond to an input parameter of a coded bit stream;

10 a voiced/unvoiced classifying portion, which classifies as voiced or unvoiced an input frame that is classified as speech, based on a second threshold value that is predetermined for the adaptive code-book gain value;

a voiced/non-stationary classifying portion, which classifies as voiced or non-stationary an input frame that is classified as voiced by the voiced/unvoiced classifying portion, based on a class of a previous frame;

15 a voiced classifying portion, which classifies as stationary or non-stationary an input frame that is classified as voiced by the voiced/non-stationary classifying portion, based on a third threshold value that is predetermined for the amount of change in the ACBG value or a difference between the maximum value and the minimum value of the pitch delay; and

20 a transmission rate determining portion, which determines a transmission rate and a type of the determined transmission rate for an input frame, based on transmission rates and types of the transmission rates that are predetermined for a class of the input frame corresponding to the result of classification.

25 2. A method of determining a transmission rate in speech transcoding, the method comprising:

(a) classifying an input frame as speech or silence based on a first threshold value that is predetermined for at least one of a fixed code-book gain value, an adaptive code-book gain value, a noise to signal rate, and a pitch delay that correspond to an input parameter of a coded bit stream;

30 (b) classifying as voiced or unvoiced an input parameter that is classified as speech, based on a third threshold value that is predetermined for the amount of change in the ACBG value or a difference between the maximum value and the minimum value of the pitch delay;

(c) classifying as voiced or non-stationary an input frame that is classified as voiced, based on a class of a previous frame;

(d) classifying as stationary or non-stationary an input frame that is classified as voiced, based on a third threshold value that is predetermined for the amount of change in the ACBG value or a difference between the maximum value and the minimum value of the pitch delay; and

(e) determining a transmission rate and a type of the determined transmission rate for an input frame, based on transmission rates and types of the transmission rates that are predetermined for a class of the input frame corresponding to the result of classification.

3. The method of claim 2, wherein in step (a), the input frame is classified as speech or silence based on the first threshold value that is predetermined for the adaptive code-book gain value corresponding to the input parameter.

4. The method of claim 3, wherein the first threshold value is set to be smaller than the second threshold value.

5. The method of claim 2, wherein in step (a), the input frame is classified as speech or silence based on a fourth threshold value that is predetermined for the difference between the maximum value and the minimum value of the pitch delay.

6. The method of claim 5, wherein the fourth threshold value is set to be larger than the third threshold value.

7. The method of claim 2, wherein in step (a), the input frame is classified as speech or silence based on a fifth threshold value that is predetermined for the fixed code-book gain value.

8. The method of claim 7, wherein the NSR for the input frame is smaller than a sixth threshold value.

9. A computer readable recording medium having recorded thereon a program for a method of determining a transmission rate in speech transcoding, the method comprising:

5 (a) classifying an input frame as speech or silence using a first threshold value that is predetermined for at least one of a fixed code-book gain value, an adaptive code-book gain value, a noise to signal rate, and a pitch delay that correspond to an input parameter of a coded bit stream;

10 (b) classifying as voiced or unvoiced an input parameter that is classified as speech, based on a third threshold value that is predetermined for the amount of change in the ACBG value or a difference between the maximum value and the minimum value of the pitch delay;

(c) classifying as voiced or non-stationary an input frame that is classified as voiced, based on a class of a previous frame;

15 (d) classifying as stationary or non-stationary an input frame that is classified as voiced, based on a third threshold value that is predetermined for the amount of change in the ACBG value or a difference between the maximum value and the minimum value of the pitch delay; and

20 (e) determining a transmission rate and a type of the determined transmission rate for an input frame, based on transmission rates and types of the transmission rates that are predetermined for a class of the input frame corresponding to the result of classification.